

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No. 16887-1049

In re patent application of

Naruhito KONDO et al.

Serial No. Div. Of 09/393,317

Filed: August 29, 2001

For: METHOD OF TREATING WASTE FROM NUCLEAR FUEL HANDLING  
FACILITY AND APPARATUS FOR CARRYING OUT THE SAME

PRELIMINARY AMENDMENT

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Prior to examination of the above-identified application, Applicants respectfully request that the following amendment be entered into the application:

**IN THE SPECIFICATION:**

Page 1, after the title, please insert the following:

**--Related Applications**

This application is a divisional of U.S. Patent Application Serial No. 09/393,317, filed on September 10, 1999.--

Please replace the paragraphs listed below with the following amended paragraphs. In accordance with 37 C.F.R. 121, marked up versions of the amended paragraphs are provided showing changes made with brackets and underlines.

Please replace the second paragraph on page 20, which begins on line 9, with the following:

-- The reducing unit 60 reduces radioactive contaminated waste 100. The thermal melting unit 64 heats and melts the reduced waste 101 provided by reducing the radioactive

contaminated waste 100 by the reducing unit 60. The molten salt electrolysis unit 65 subjects a molten salt 102, i.e., the molten waste provided by the thermal melting unit 64 to electrolysis. Thus, the molten waste prepared by melting the reduced waste 101 produced by reducing the radioactive contaminated waste 100 by the reducing unit 60 is used as the molten salt 102 for electrolysis. The cleaning unit 66 separates nuclear fuel materials (uranium metal) and an adsorbent (NaF) contained in a cathodic deposit 76 deposited on the cathode of the molten salt electrolysis unit 65. The evaporative drying unit 67 processes a used cleaning liquid 77 used by the cleaning unit 66 for evaporative drying to recover the adsorbent (NaF) dissolved in the used cleaning liquid 77. A cleaning liquid 78 recovered by evaporation is returned through a recovered cleaning liquid return line 79 to the cleaning unit 66 and is reused. The nuclear fuel materials (uranium metal) 80 separated from the adsorbent by the cleaning unit 66 is oxidized by the oxidizing unit 68, and oxides (Uranium oxide) 81 thus produced by the oxidizing unit 68 are collected. --

Please replace the second full paragraph on page 22, which begins on line 19, with the following:

-- Since the electrical resistance of the molten salt is very low as compared with that of an electrolytic water solution, an electric current flows uniformly over the surface of the waste. Consequently, the waste having a complicated shape, which is difficult to decontaminate by conventional techniques, can surely be decontaminated. Since the electrical resistance of the molten salt is low, a large current can be supplied through the molten salt without entailing abnormal heat generation to increase the process speed. The molten salt electrolysis process is safe because hydrogen is not generated at the cathode when the molten salt is used for the electrolysis. --

#### IN THE CLAIMS

Please cancel claims 13 through 16 and claims 26 through 28. Claims 1 through 12 and 17 through 25 should be the pending claims for this application.

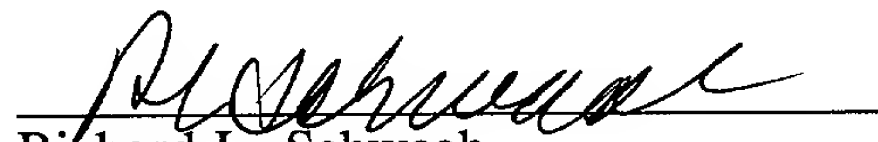
REMARKS

The Examiner is respectfully requested to enter the above amendments prior to examination of the instant application. The amendments are made to include changes made to the specification in the parent application, to delete claims, and to insert the related application information, and are not deemed to change the scope of the invention.

Respectfully submitted,

August 29, 2001

Date

  
Richard L. Schwaab  
Registration No. 25,479

FOLEY & LARDNER  
3000 K Street, N.W. Suite 500  
Washington, D.C. 20007-5109

**Marked Up Version of Amended Specification Paragraphs Showing Changes Made with Underlines and Brackets**

Please amend the second paragraph on page 20, beginning on line 9, as follows:

The reducing unit 60 reduces radioactive contaminated waste 100. The thermal melting unit 64 heats and melts the reduced waste 101 provided by reducing the radioactive contaminated waste [waist] 100 by the reducing unit 60. The molten salt electrolysis unit 65 subjects a molten salt 102, i.e., the molten waste provided by the thermal melting unit 64 to electrolysis. Thus, the molten waste prepared by melting the reduced waste 101 produced by reducing the radioactive contaminated waste 100 by the reducing unit 60 is used as the molten salt 102 for electrolysis. The cleaning unit 66 separates nuclear fuel materials (uranium metal) and an adsorbent (NaF) contained in a cathodic deposit 76 deposited on the cathode of the molten salt electrolysis unit 65. The evaporative drying unit 67 processes a used cleaning liquid 77 used by the cleaning unit 66 for evaporative drying to recover the adsorbent (NaF) dissolved in the used cleaning liquid 77. A cleaning liquid 78 recovered by evaporation is returned through a recovered cleaning liquid return line 79 to the cleaning unit 66 and is reused. The nuclear fuel materials (uranium metal) 80 separated from the adsorbent by the cleaning unit 66 is oxidized by the oxidizing unit 68, and oxides (Uranium oxide) 81 thus produced by the oxidizing unit 68 are collected.

Please amend the second full paragraph on page 22, beginning on line 19, with the following:

Since the electrical resistance of the molten salt is very low as compared with that of an electrolytic water solution, an electric current flows uniformly over the surface of the waste. Consequently, the waste having a complicated shape, which is difficult to decontaminate by conventional techniques, can surely be decontaminated. Since the electrical resistance of the molten salt is low, a large current can be supplied through the molten salt without entailing abnormal heat generation to increase the process speed. The molten salt electrolysis process is safe because [any] hydrogen is not generated at the cathode when the molten salt is used for the electrolysis.

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**Attorney Docket No. 016887/1049**

In re patent application of

Naruhito KONDO et al.

Group Art Unit: Unassigned

Serial No.: Div. Of 09/393,317

Examiner: Unassigned

Filed: August 29, 2001

For: METHOD OF TREATING WASTE FROM NUCLEAR FUEL HANDLING  
FACILITY AND APPARATUS FOR CARRYING OUT THE SAME

**PROPOSED CHANGES TO THE DRAWINGS**

Commissioner for Patents  
Washington, D.C. 20231

Attn: Official Draftsman

Sir:

Subject to the approval of the Examiner, it is respectfully requested that Fig. 20 in the above-captioned application be changed to add "Prior Art" to the caption as shown in red on the copy of the figure provided herewith, which was submitted in the parent application.

Respectfully submitted,

August 29, 2001

Date

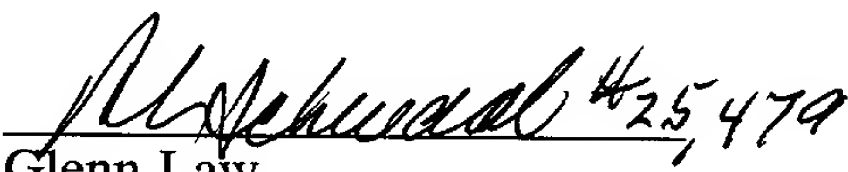
FOLEY & LARDNER

3000 K Street, N.W.

Suite 500

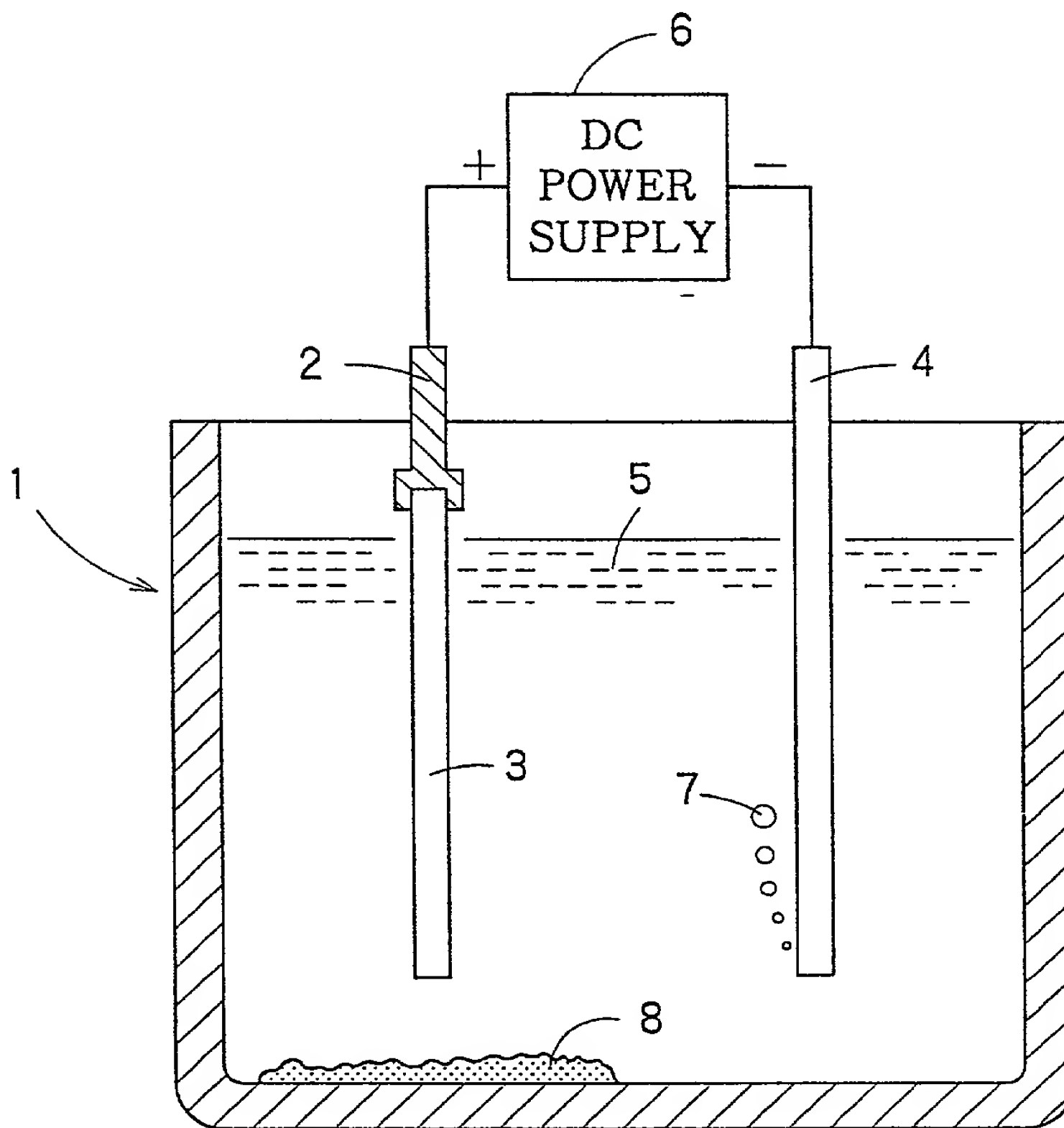
Washington, D. C. 20007-5109

Telephone: (202) 672-5300

 #25,479

Glenn Law

Reg. No. 34,371



*Prior Art*

F I G. 20



***IN THE UNITED STATES PATENT AND TRADEMARK OFFICE***

Applicant: Naruhito KONDO et al.  
Title: METHOD OF TREATING WASTE  
FROM NUCLEAR FUEL  
HANDLING FACILITY AND  
APPARATUS FOR CARRYING  
OUT THE SAME  
Appl. No.: Div. of 09/393,317  
Filing Date: 08/29/2001  
Examiner: Unassigned  
Art Unit: Unassigned

**TRANSMITTAL OF FORMAL DRAWINGS**

Commissioner for Patents  
Washington, D.C. 20231

ATTENTION: DRAWING REVIEW BRANCH

Sir:

Transmitted herewith are the formal drawings (20 sheets, Figures 1-20) for the above-identified application, as submitted in the parent application.

Fig. 20 includes the proposed drawing correction requested concurrently herewith. The Official Draftsperson is respectfully requested to approve these drawings for entry into the application.

Respectfully submitted,

Date: August 29, 2001

By  #25,479

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Glenn Law  
Attorney for Applicant  
Registration No. 34,371

Title: METHOD OF TREATING WASTE  
FROM NUCLEAR FUEL HANDLING  
FACILITY AND APPARATUS FOR  
CARRYING OUT THE SAME

Inventor(s): Naruhito KONDO et al.

Appl. No.: Div. of 09/393,317

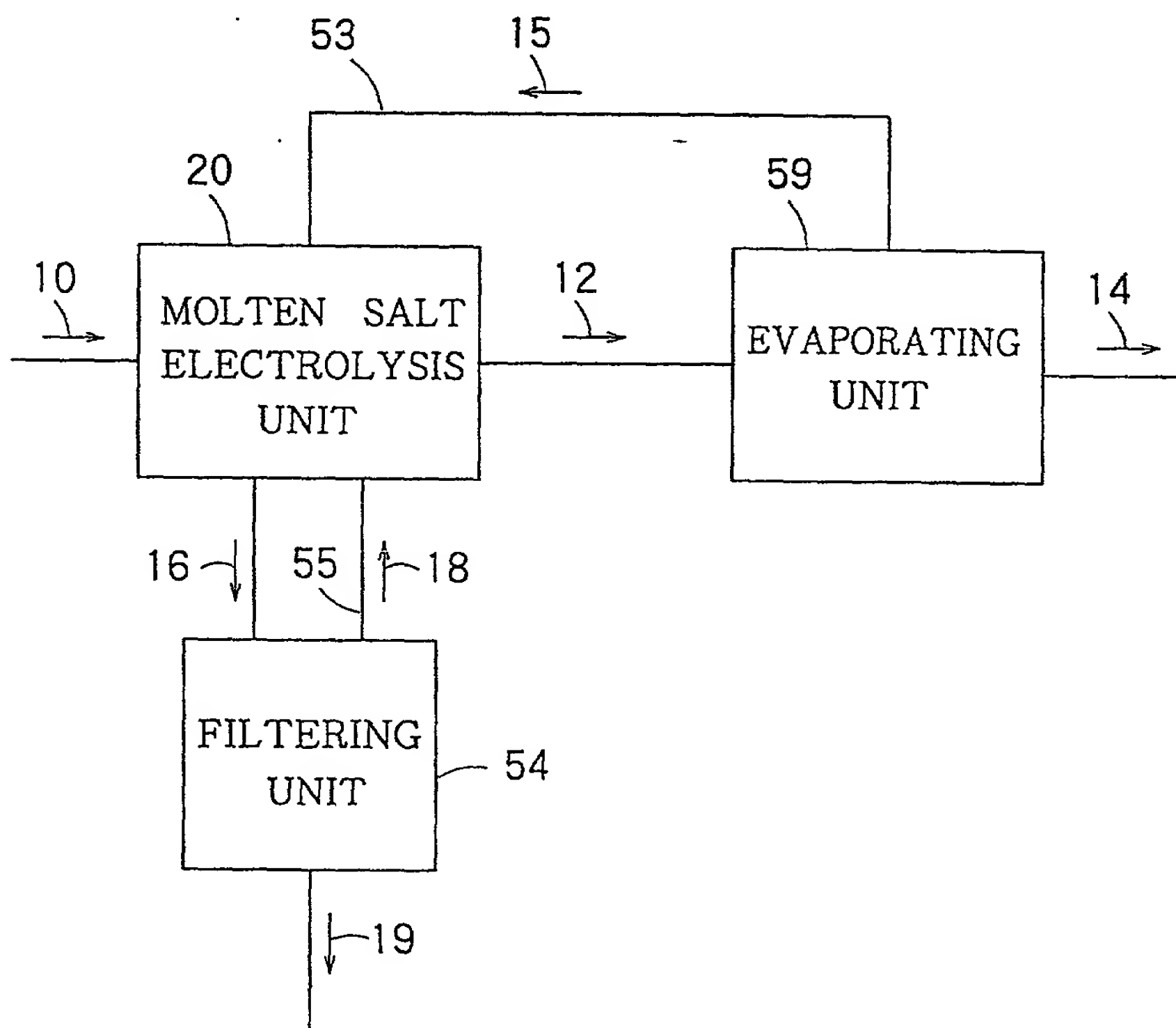
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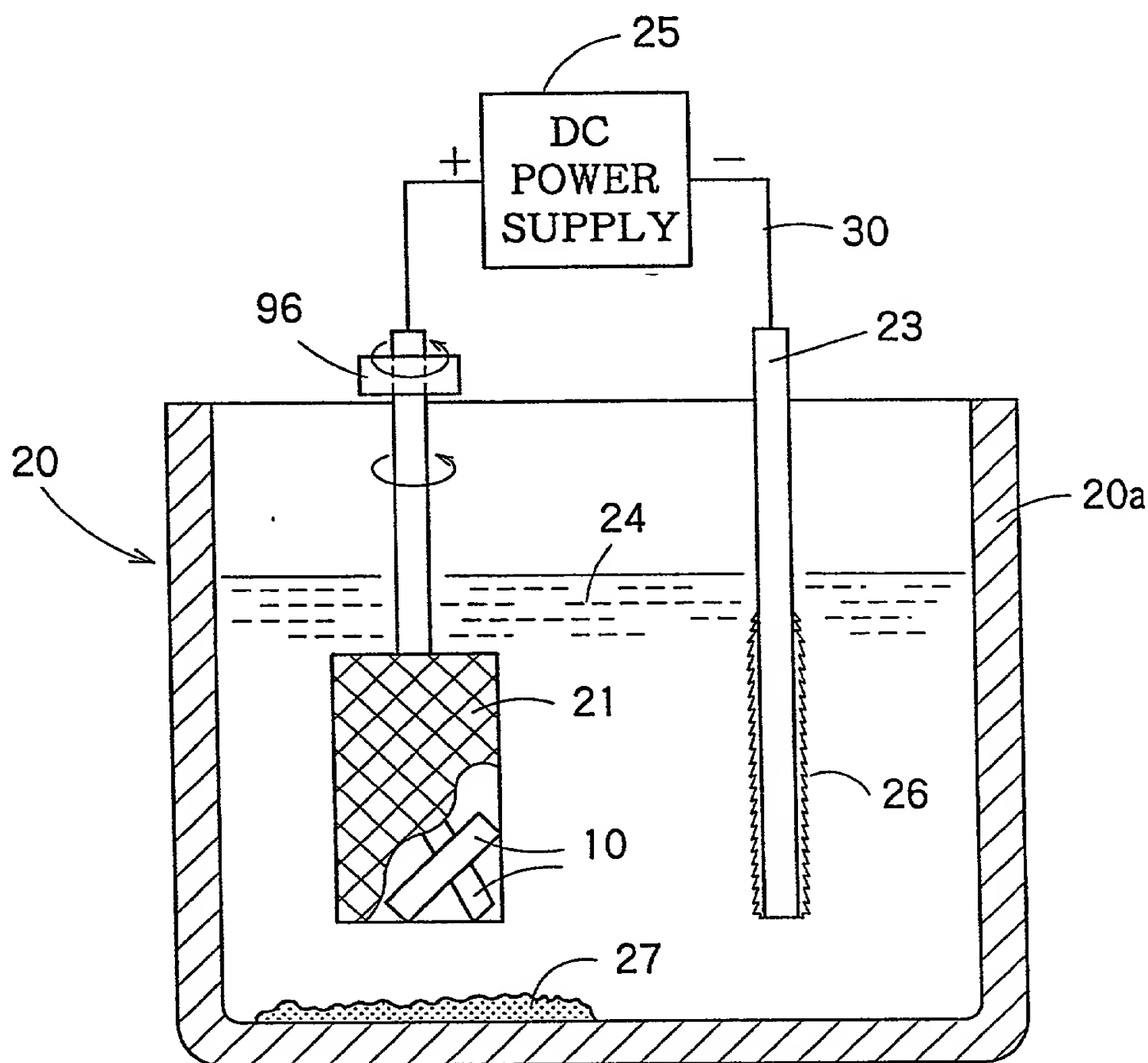
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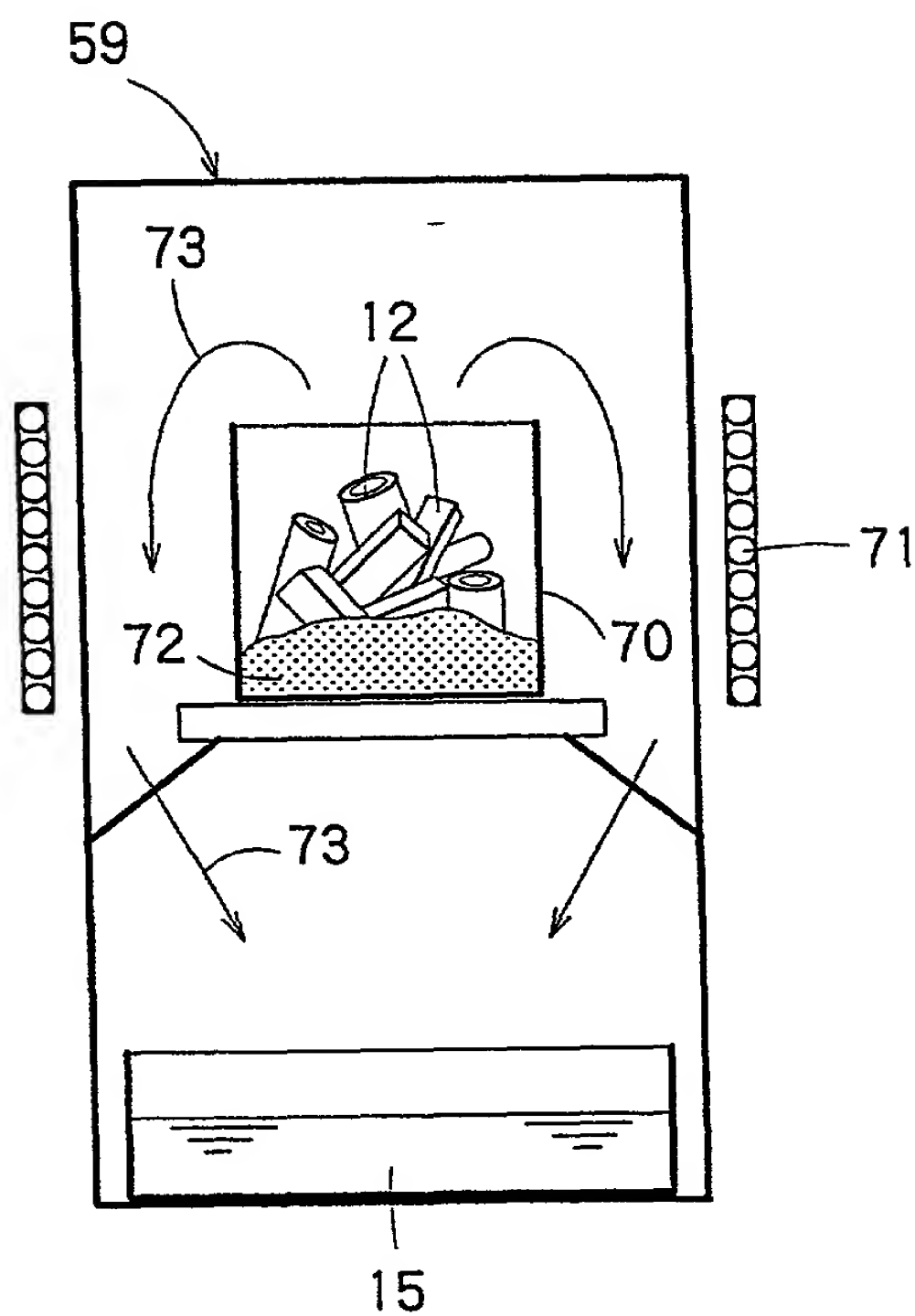
F I G. 1



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F I G. 2



F I G. 3

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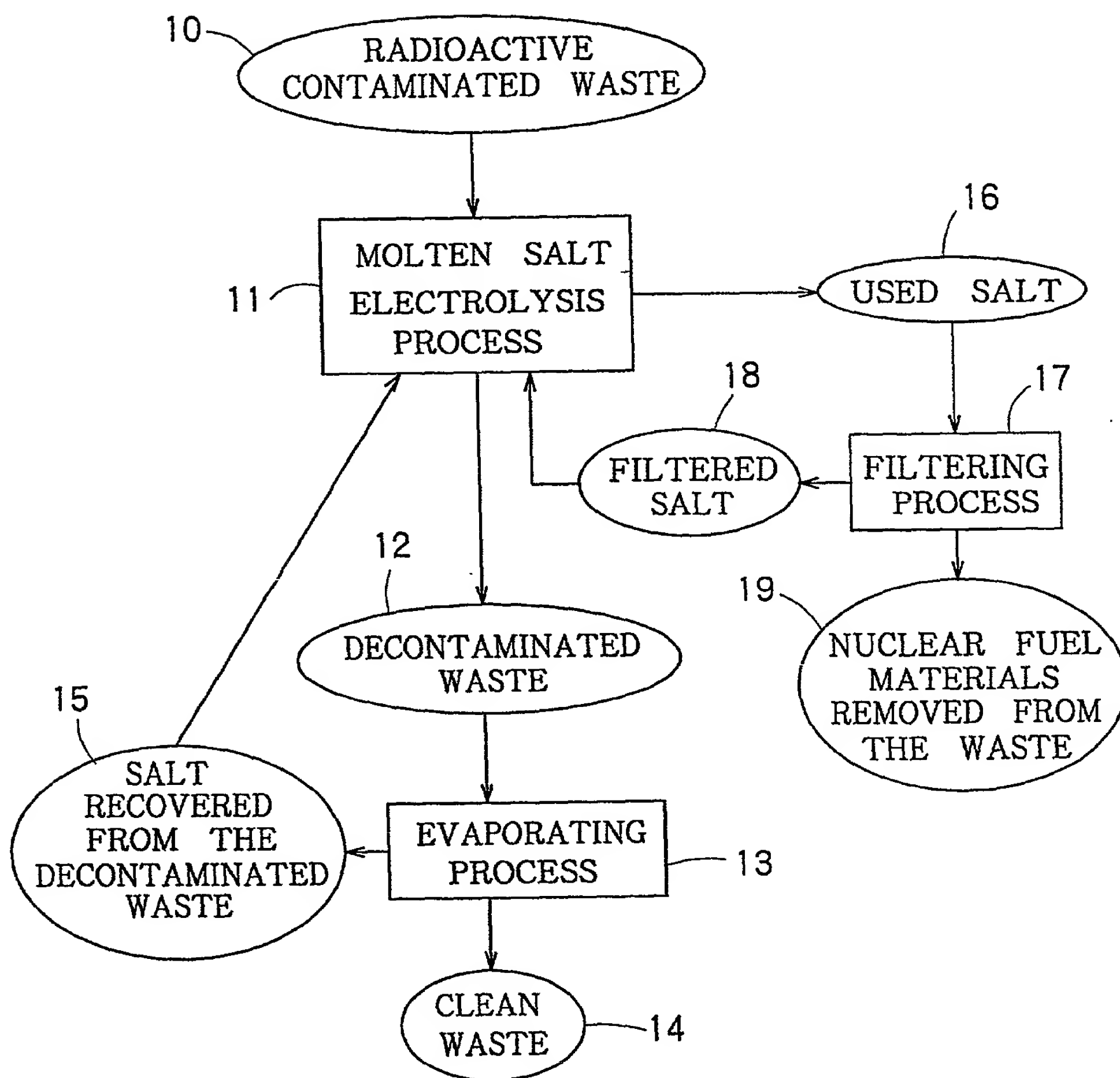


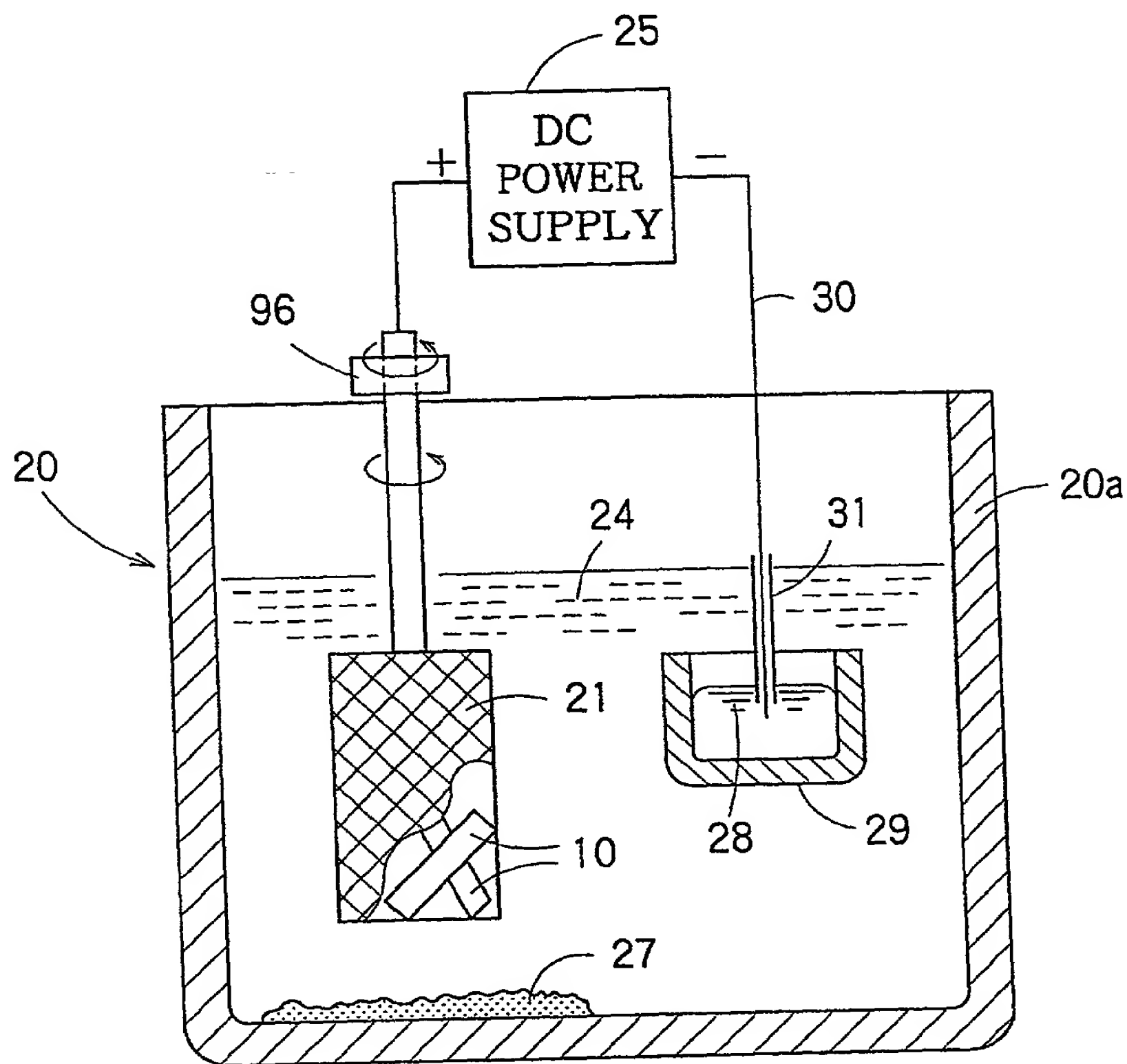
FIG. 4

Title: METHOD OF TREATING WASTE  
FROM NUCLEAR FUEL HANDLING  
FACILITY AND APPARATUS FOR  
CARRYING OUT THE SAME

Inventor(s): Naruhito KONDO et al.

Appl. No.: Div. of 09/393,317

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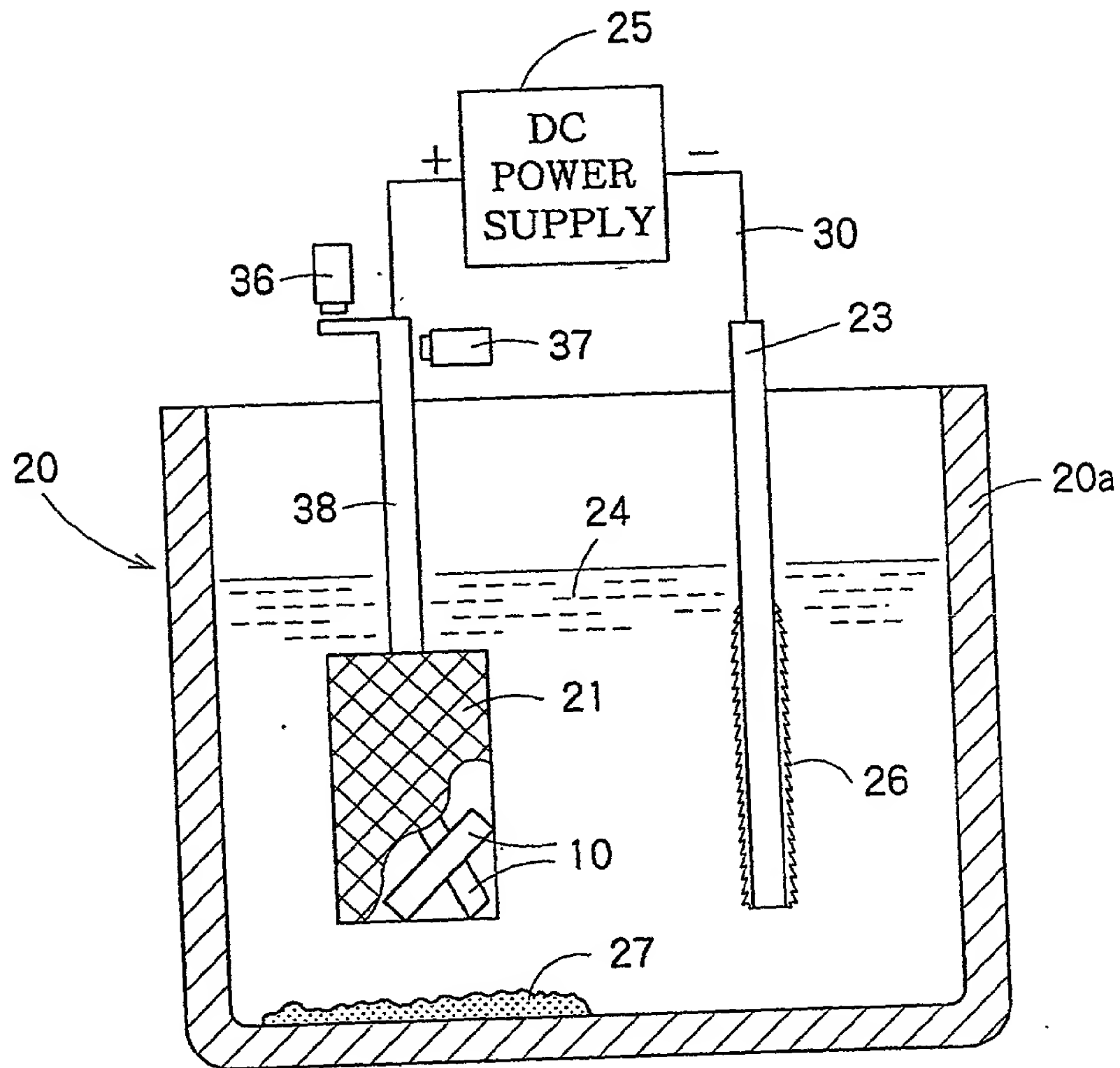
F I G. 5

Title: METHOD OF TREATING WASTE  
FROM NUCLEAR FUEL HANDLING  
FACILITY AND APPARATUS FOR  
CARRYING OUT THE SAME

Inventor(s): Naruhito KONDO et al.

Appl. No.: Div. of 09/393,317

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F I G. 6

Title: METHOD OF TREATING WASTE  
FROM NUCLEAR FUEL HANDLING  
FACILITY AND APPARATUS FOR  
CARRYING OUT THE SAME

Inventor(s): Naruhito KONDO et al.

Appl. No.: Div. of 09/393,317

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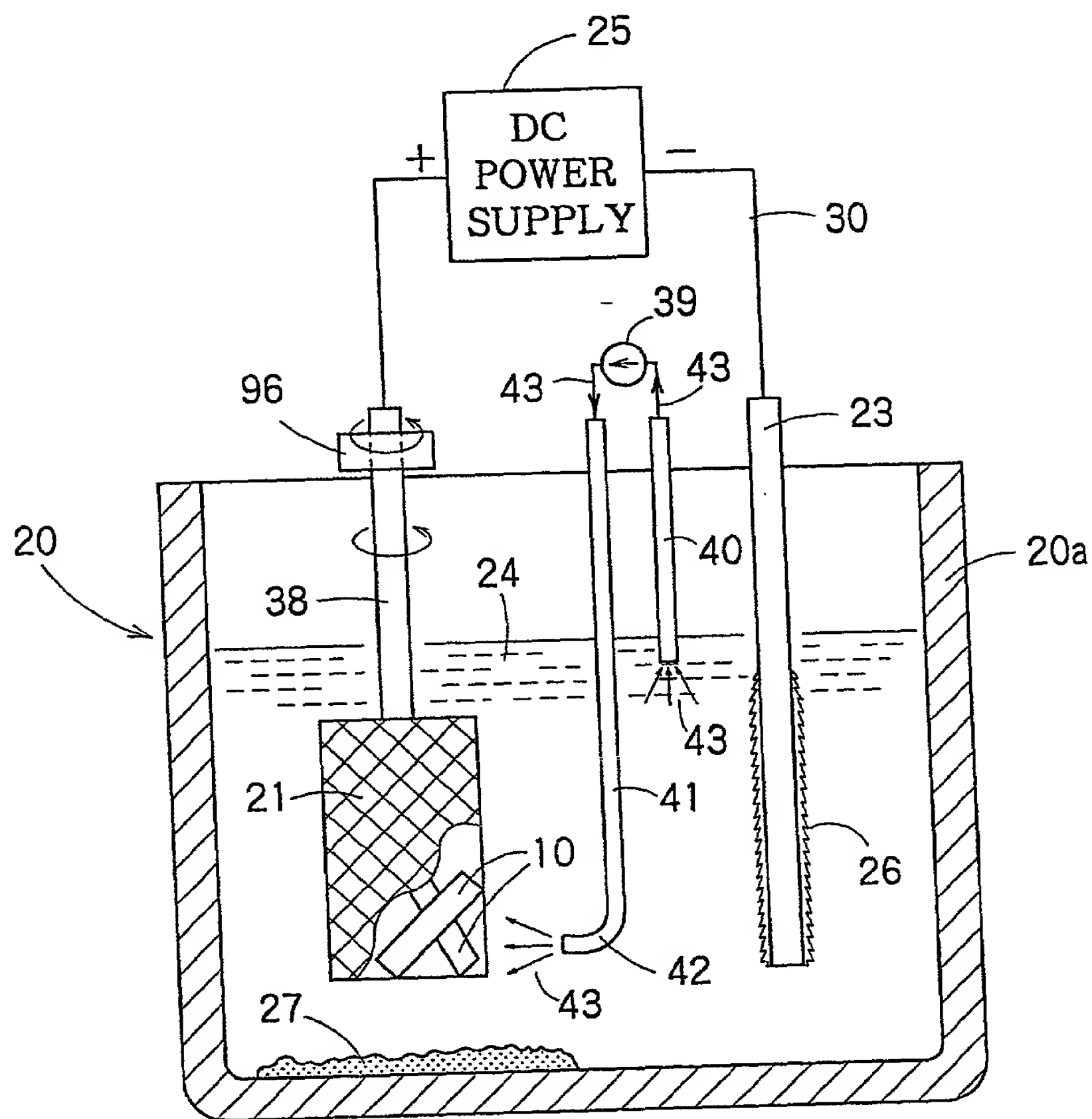
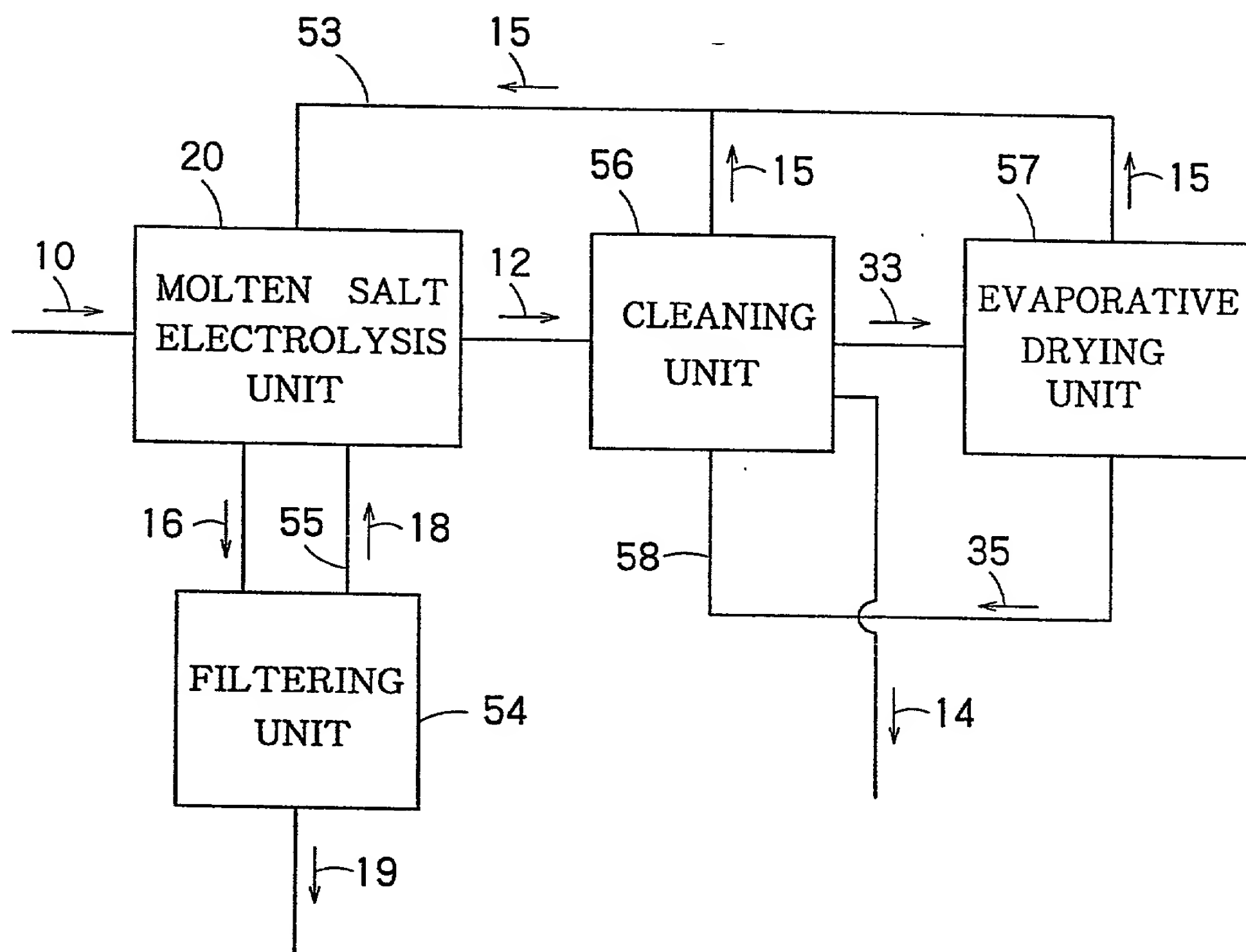


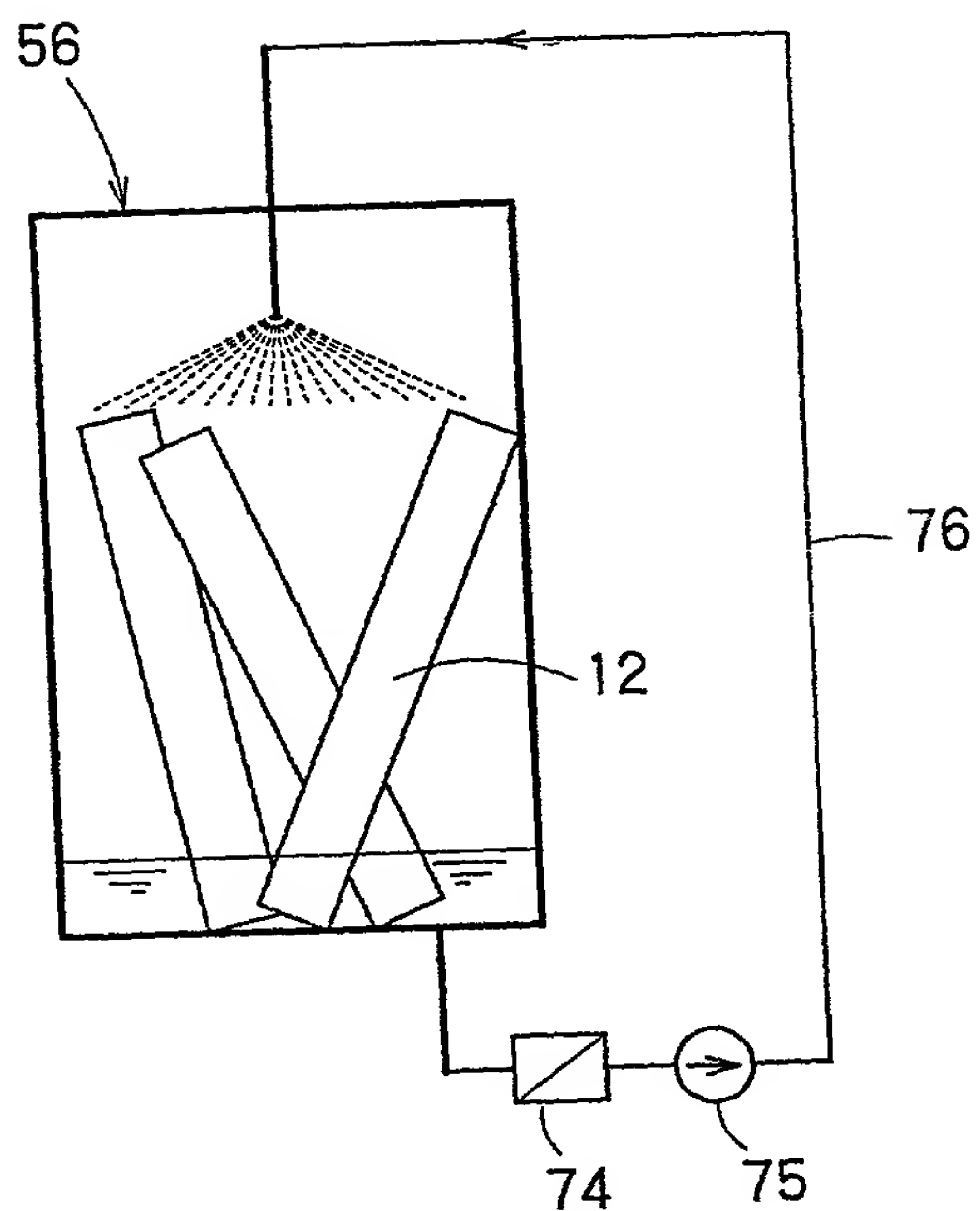
FIG. 7





F I G. 8

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F I G. 9

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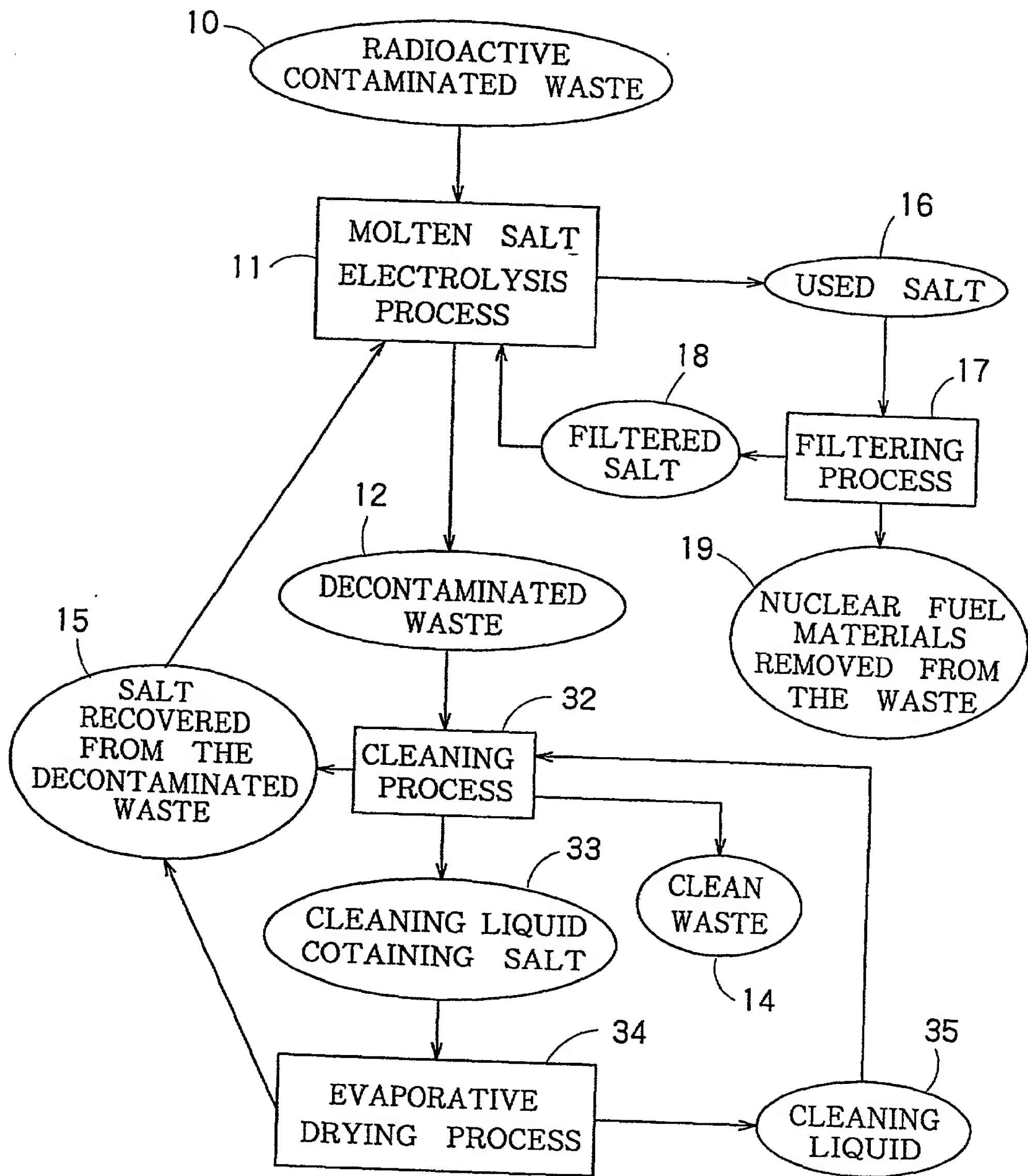


FIG. 10

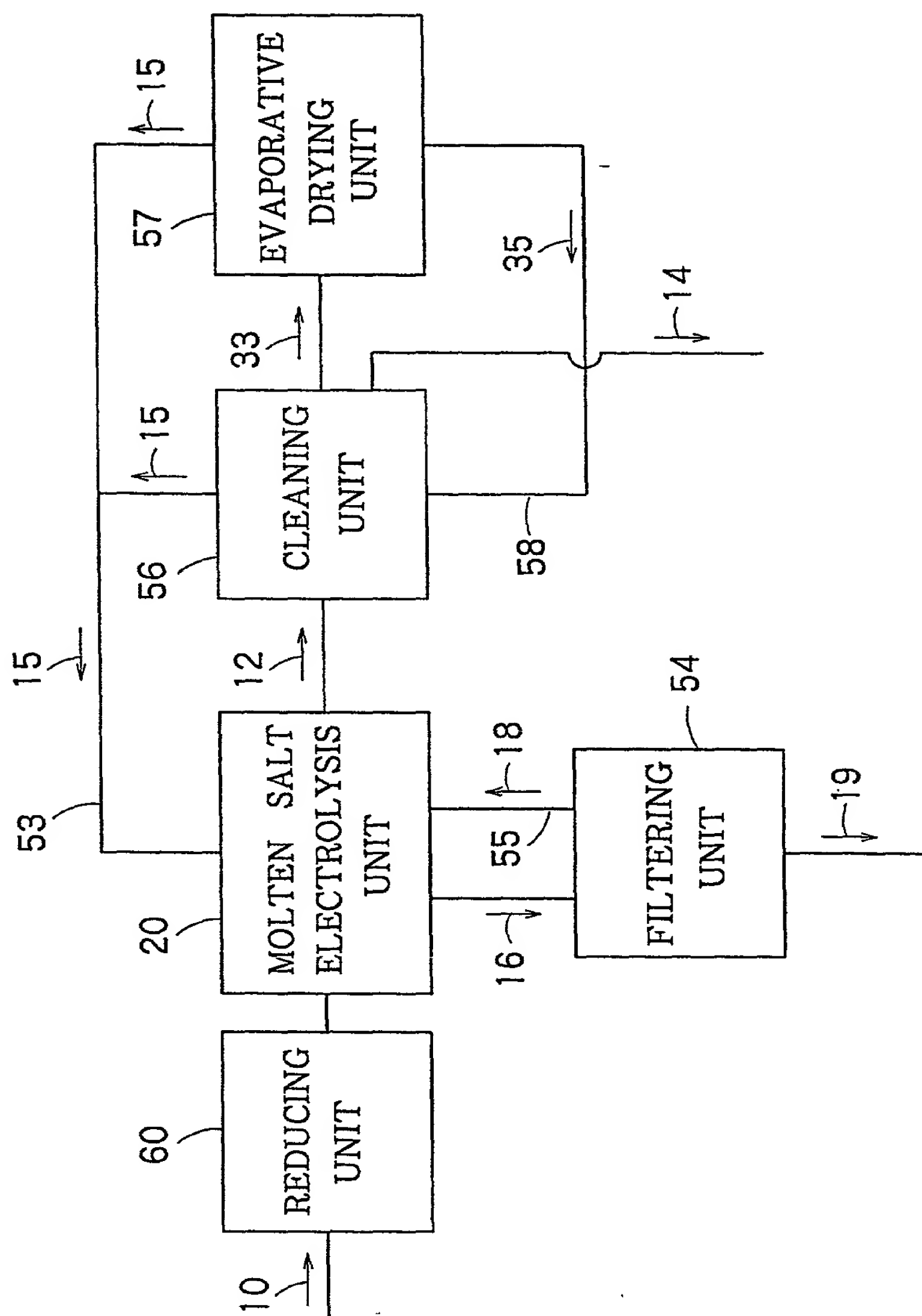
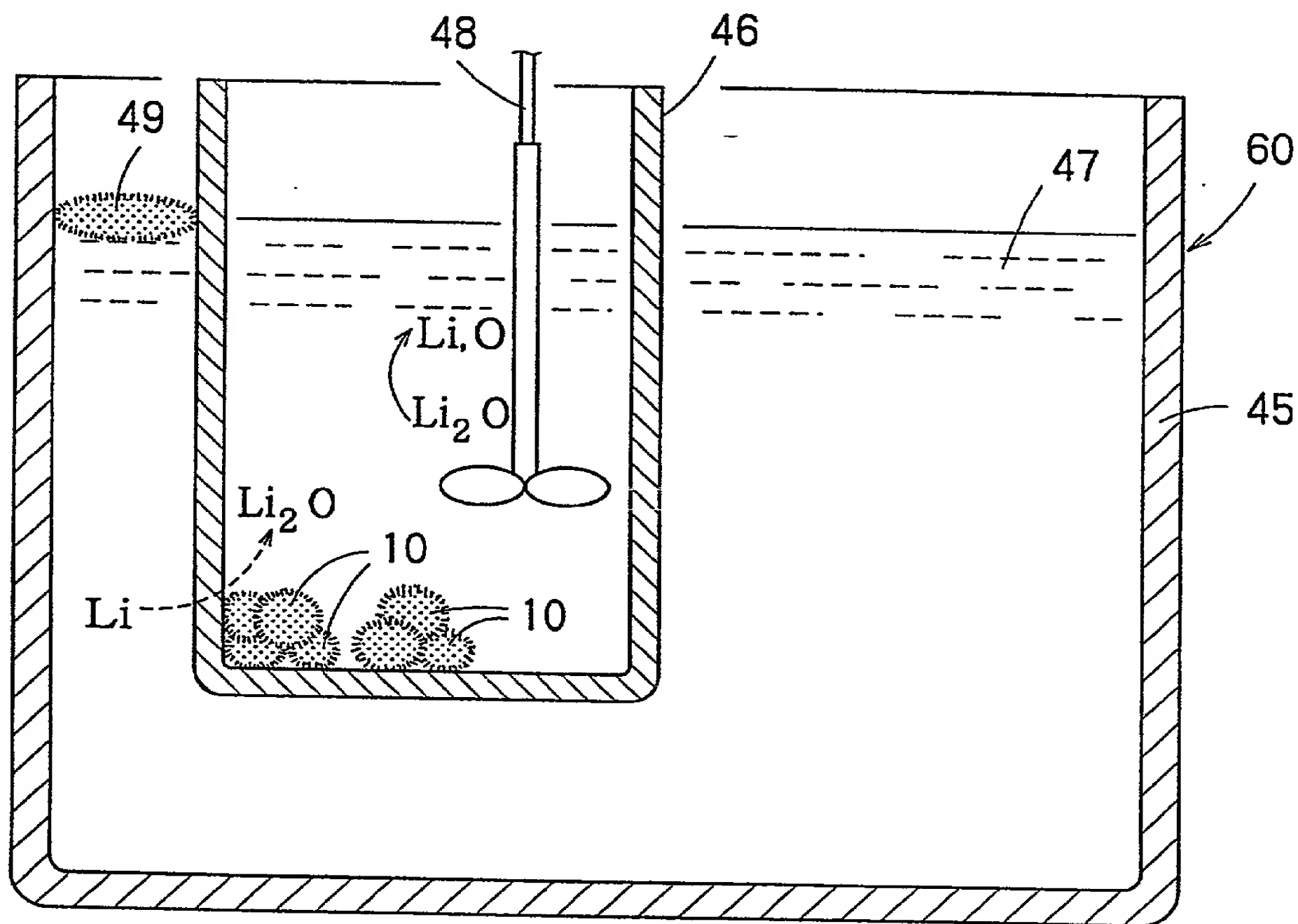
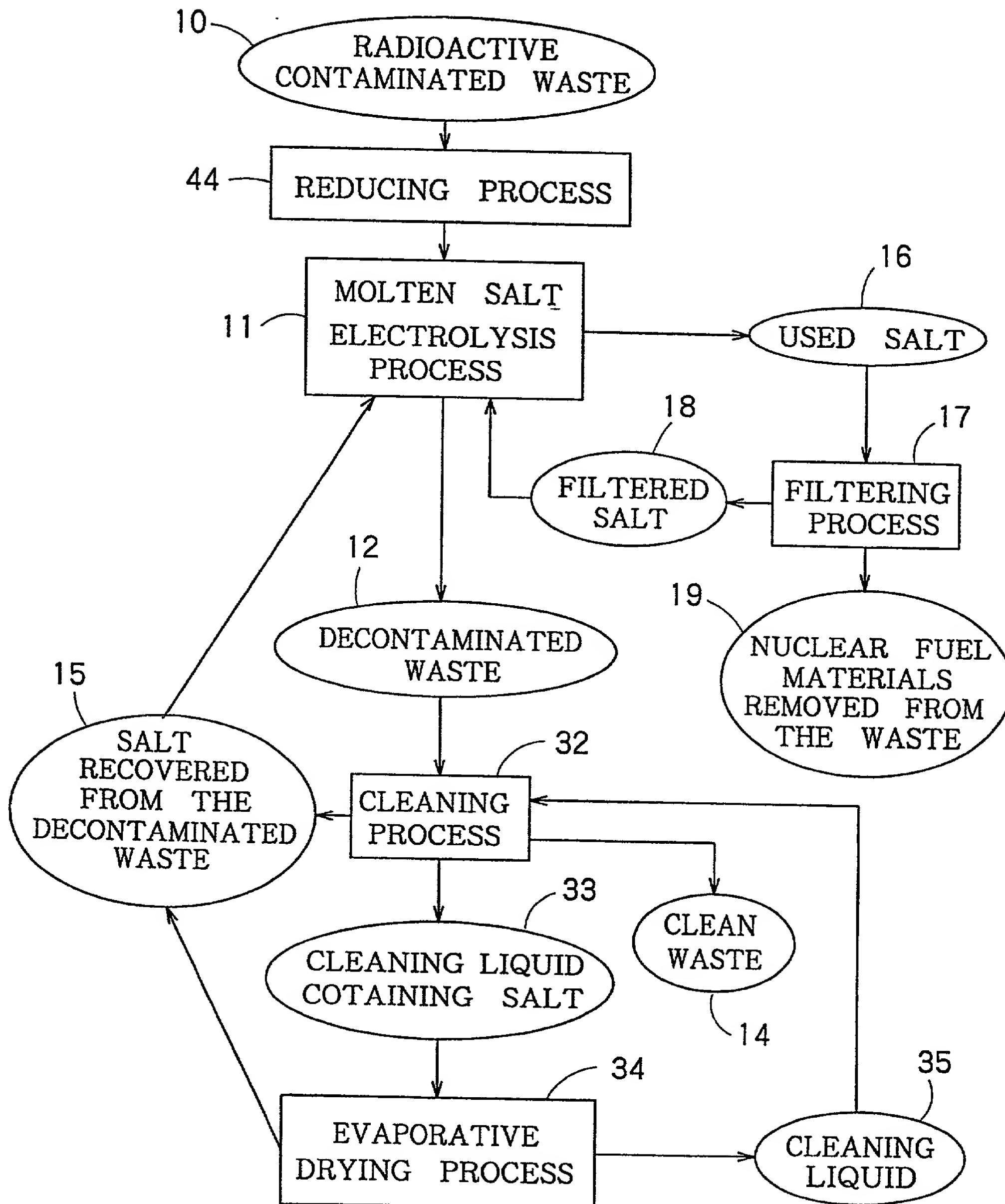


FIG. 11



F I G. 12

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F I G. 13



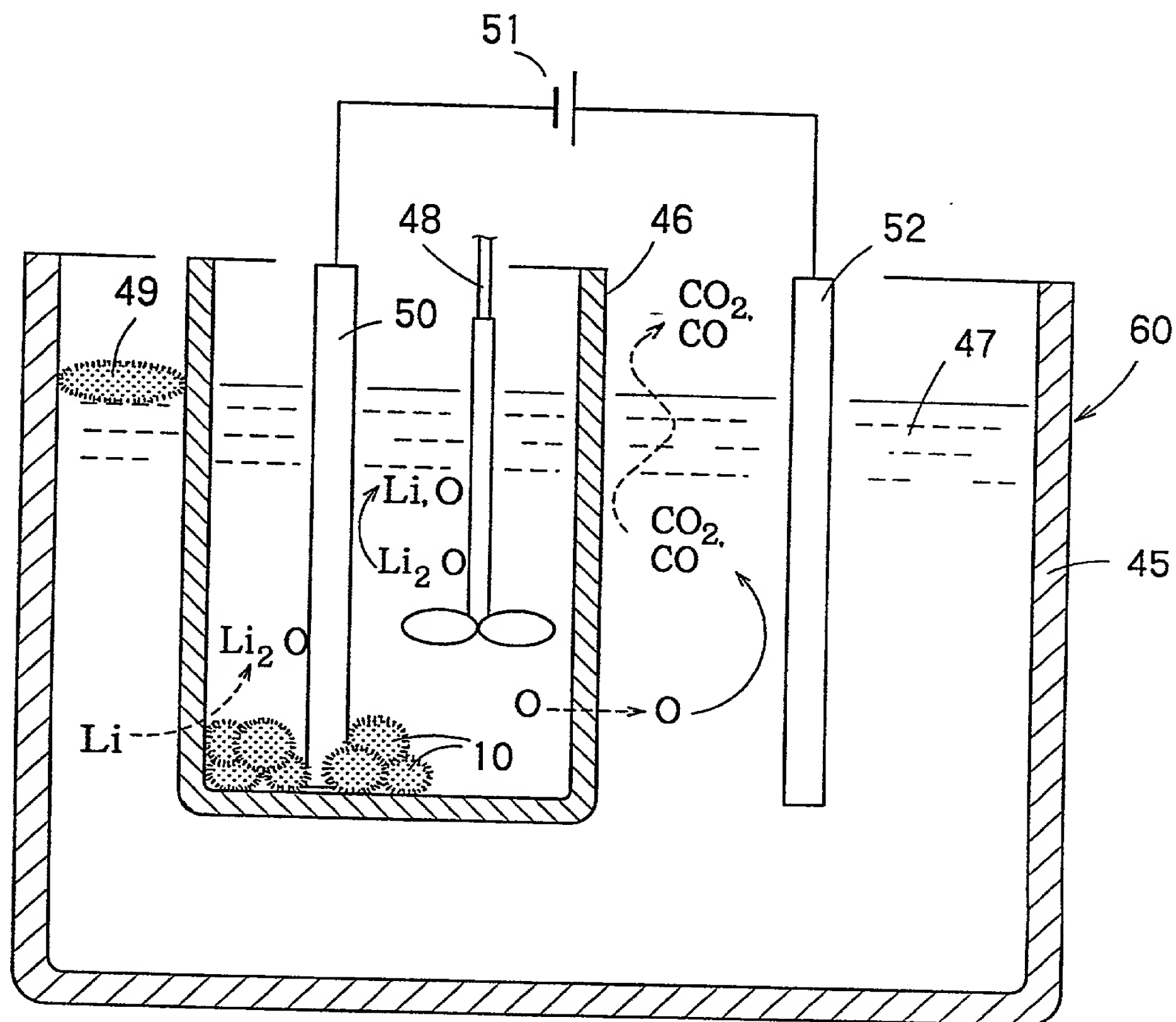
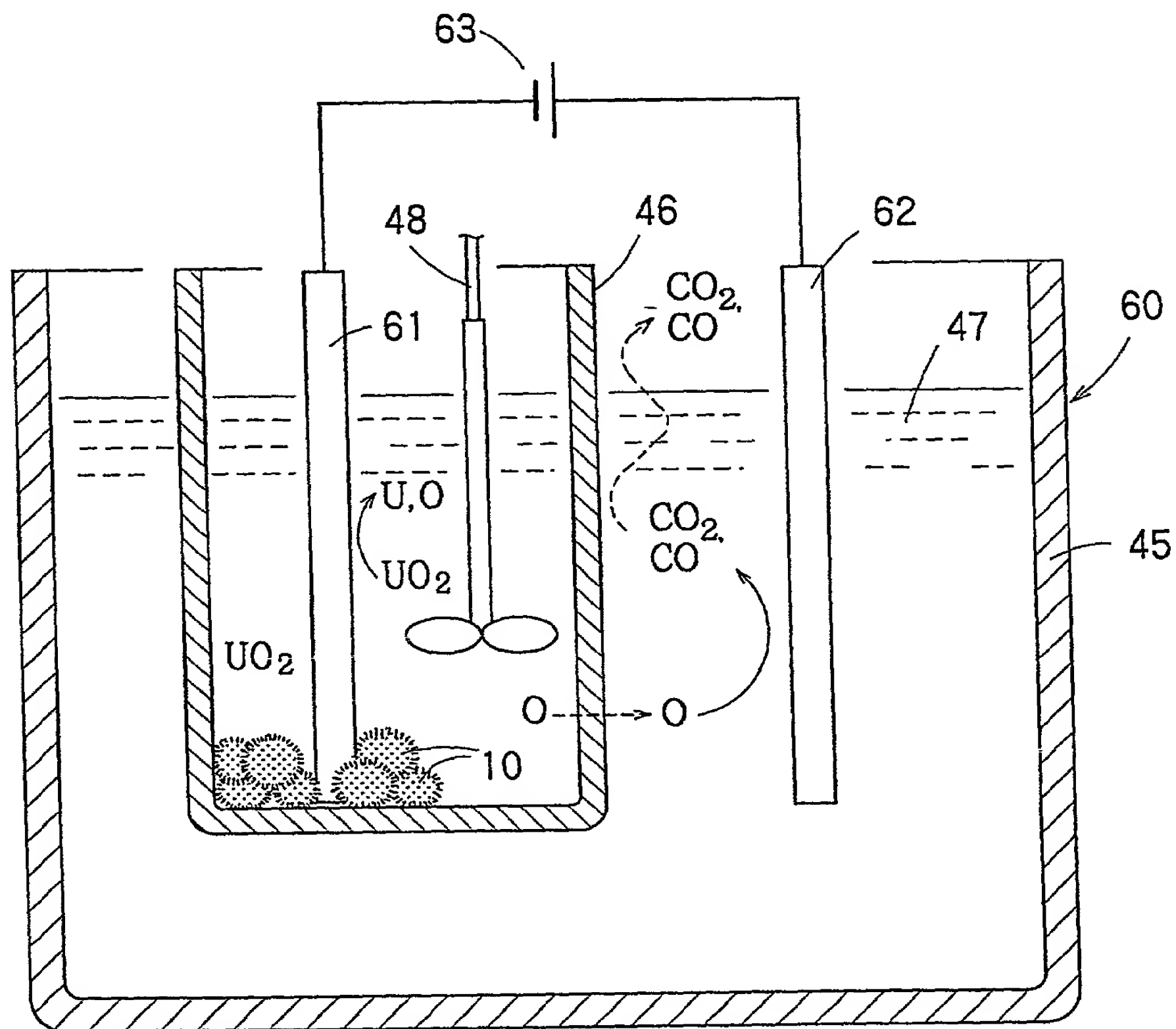


FIG. 14

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F I G. 15

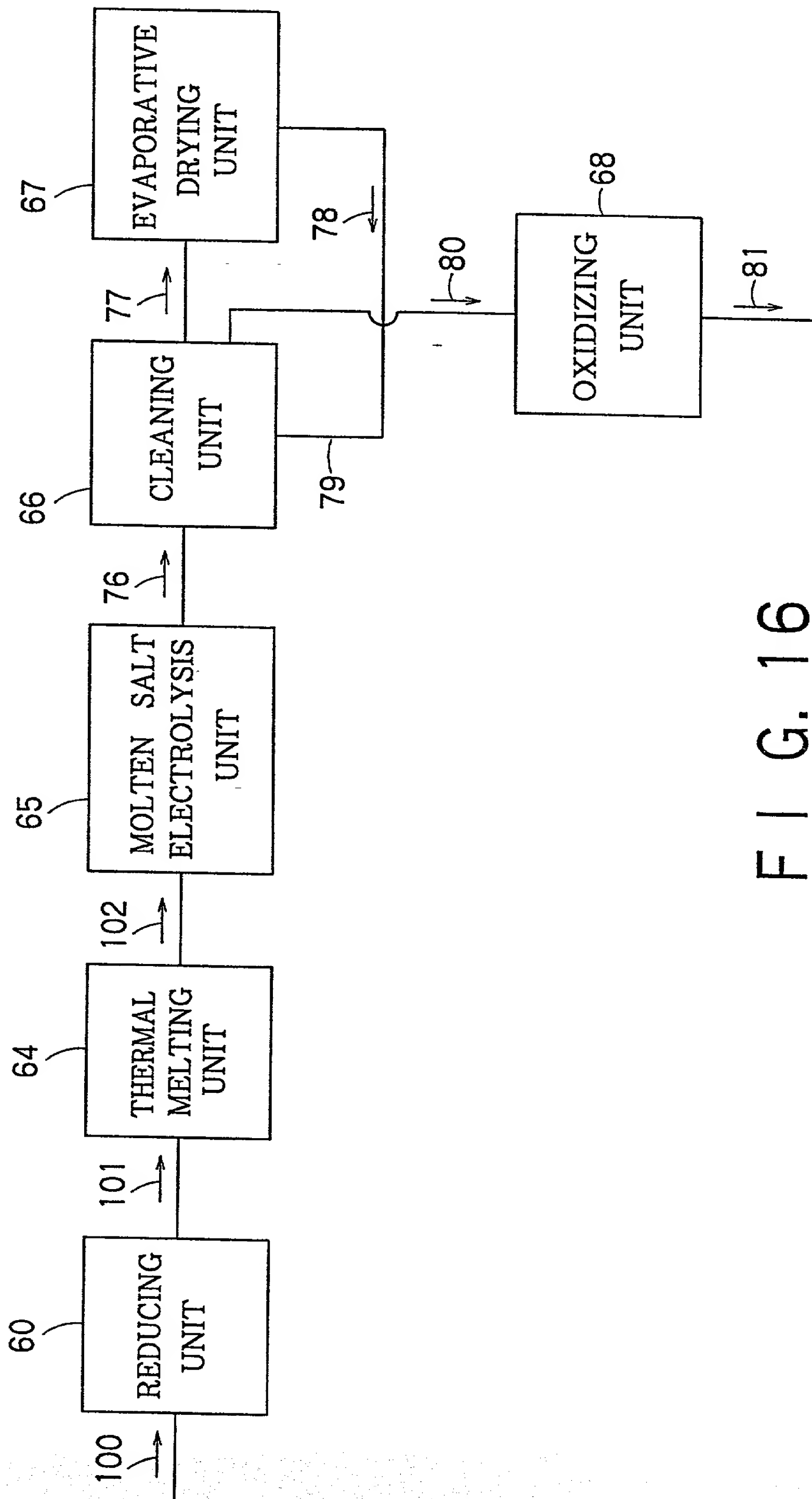
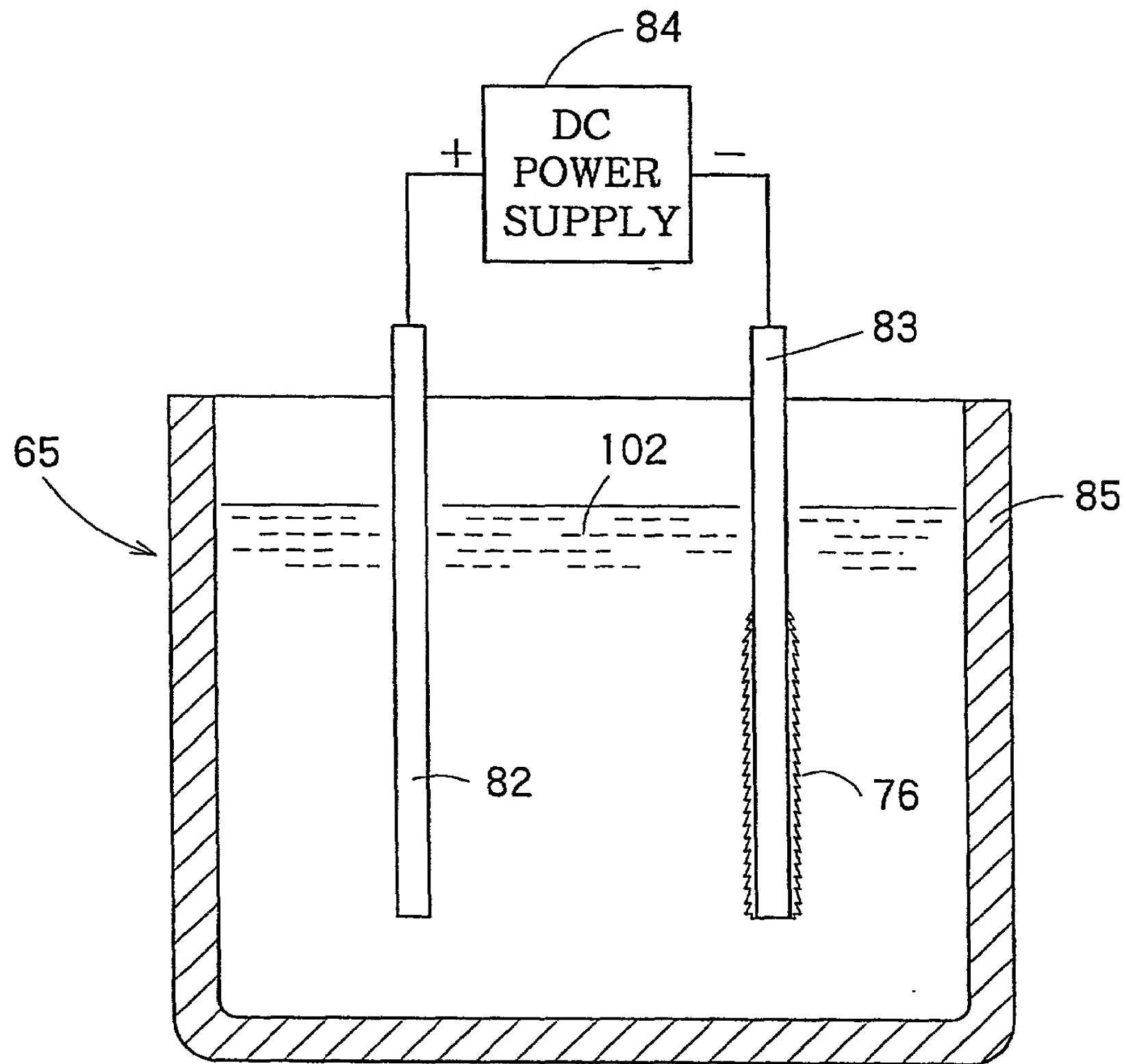


FIG. 16

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F I G. 17

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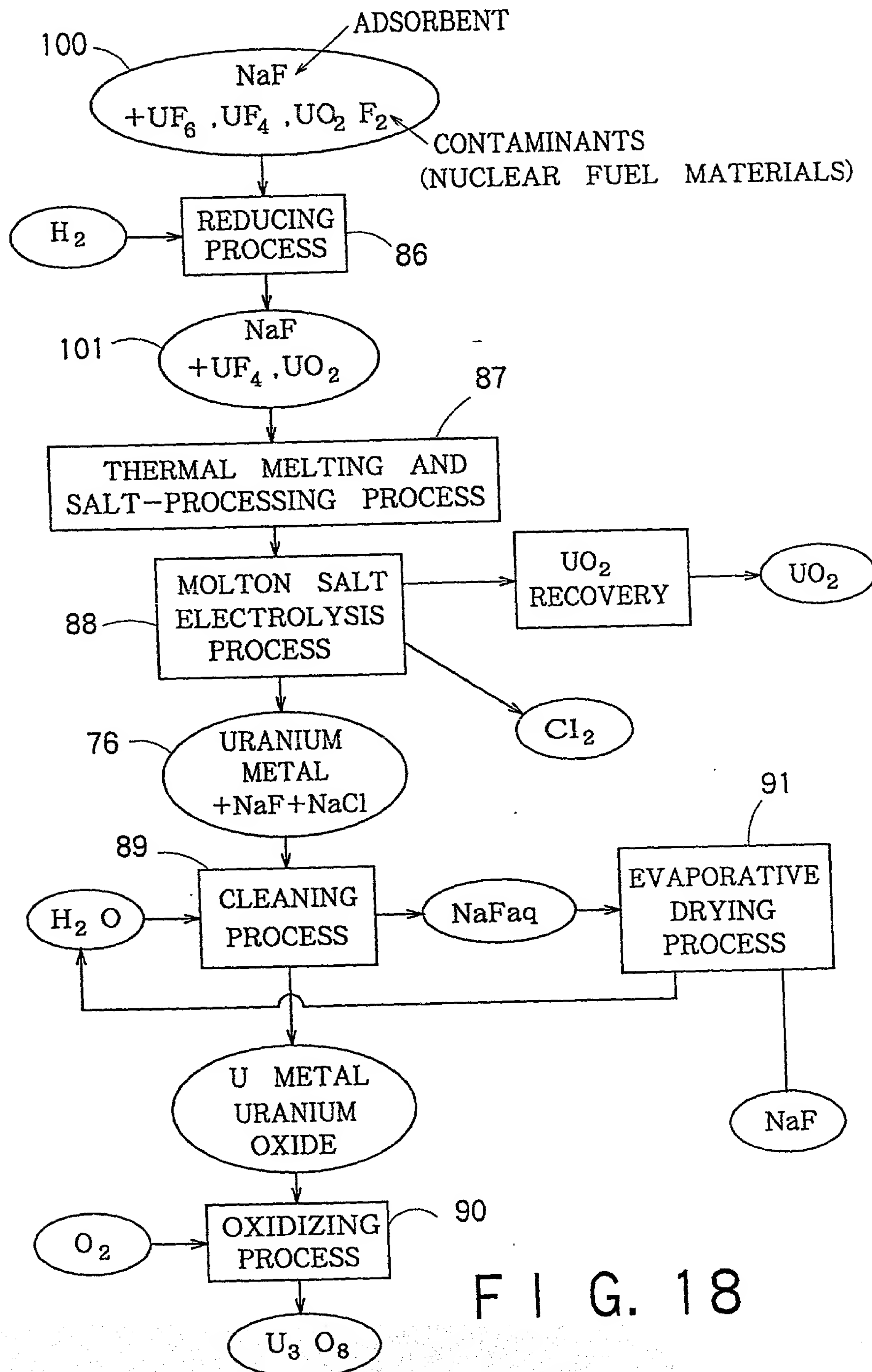
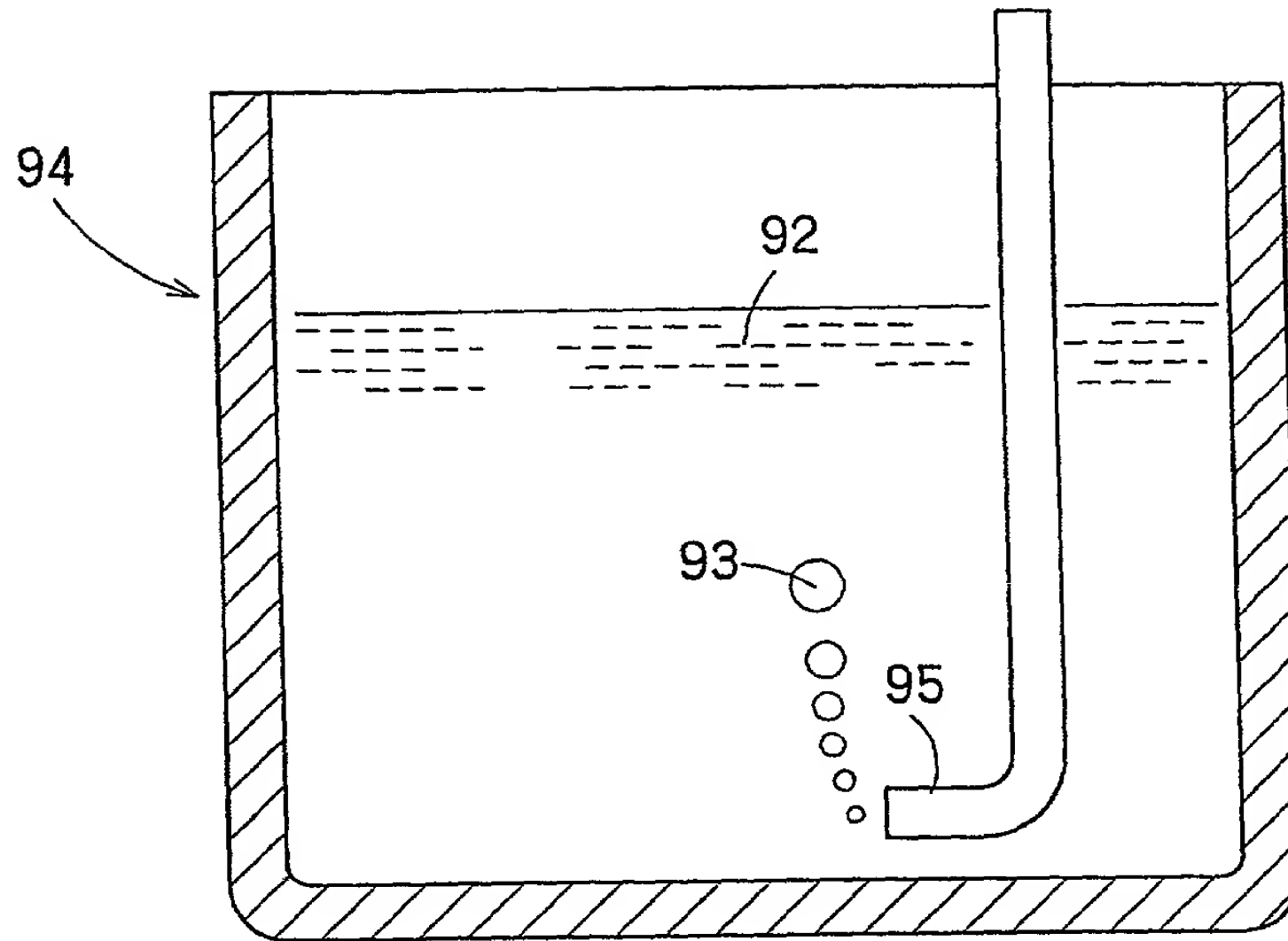


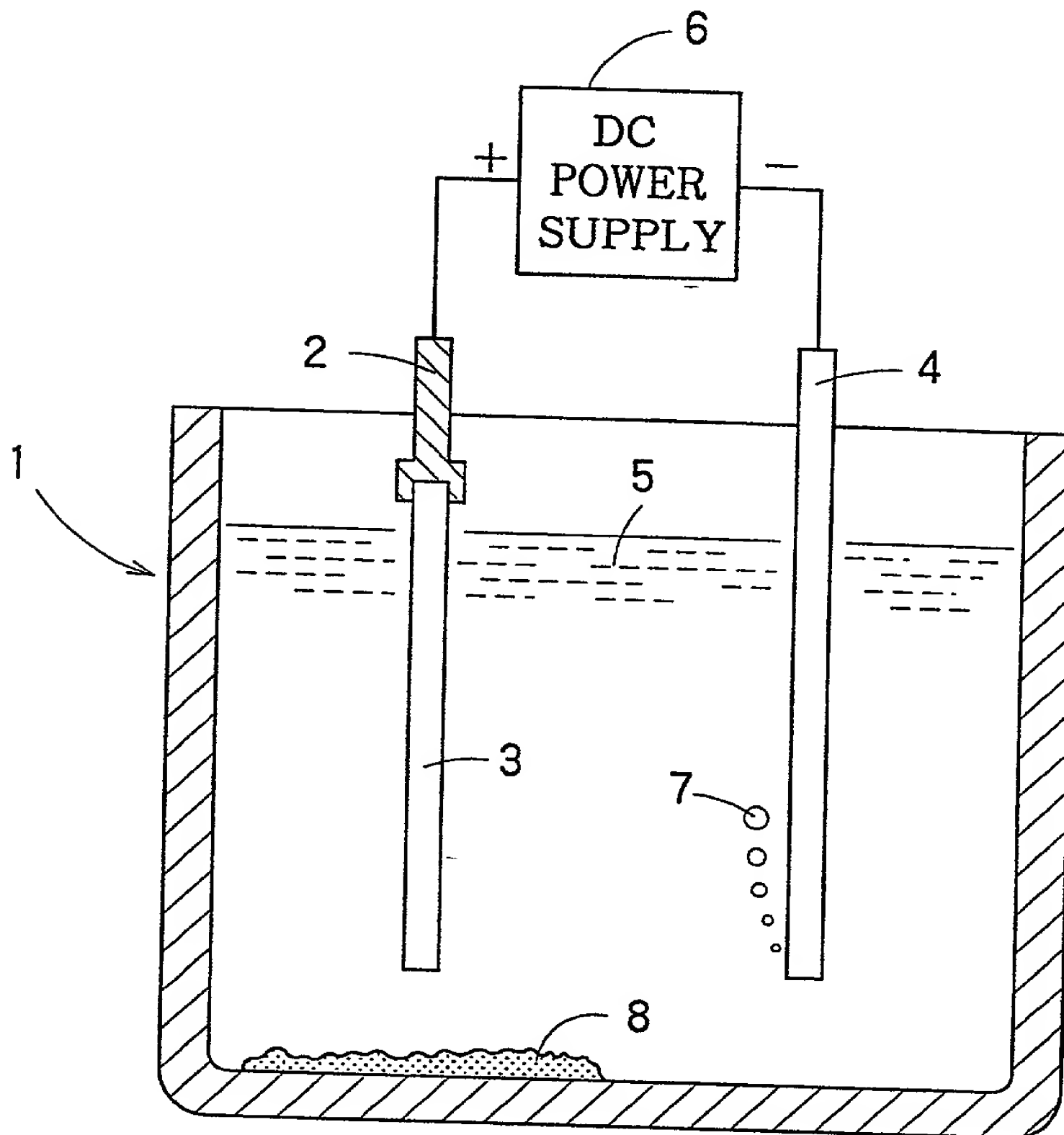
FIG. 18



F I G. 19



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**PRIOR ART**

F I G. 20

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